PANA-01943

Service Manual

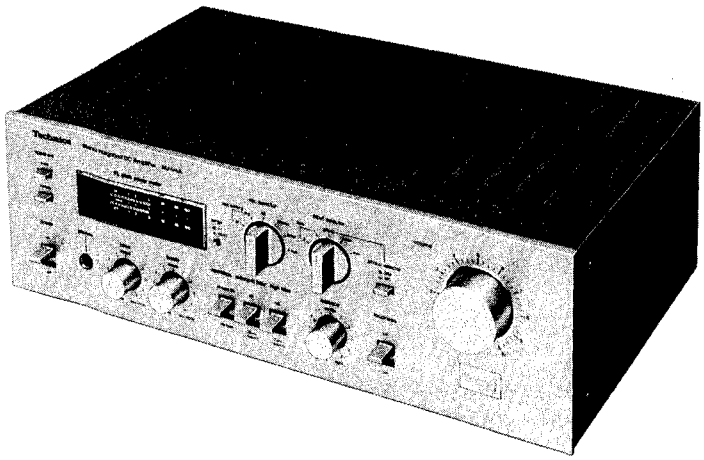
Stereo Integrated DC Amplifier

SU-V4A

[E], [EG], [XGH], [EB]

SU-V4A(K)

[E], [EG], [XGH], [EB]



* The cabinet, front panel and knob are available in black color and silver types.
The black type model is provided with (K) in the Service Manual.

Areas

* [E] and [EG] are available in Scandinavia and European except Belgium and Holland.
* [XGH] is available in Holland.
* [EB] is available in Belgium.

■ CONTENTS

	Page
LOCATION OF CONTROLS	3, 4
DISASSEMBLY INSTRUCTIONS	4, 5
ADJUSTING INSTRUCTIONS (ENGLISH)	5, 6
EINSTELLUNGSANWEISUNGEN (DEUTSCH)	7
INSTRUCTIONS DE REGLAGE (FRANÇAIS)	7, 8
REPLACEMENT PARTS LIST (Electrical Parts)	8
BLOCK DIAGRAM OF IC'S	9, 20
BLOCK DIAGRAM	10
VARIABLE RESISTORS	11
PRINTED CIRCUIT BOARD WIRING VIEW	12 ~ 15
TERMINAL GUIDE OF TRANSISTORS AND IC'S	15
SCHEMATIC DIAGRAM	16 ~ 20
EXPLODED VIEWS	21, 22
REPLACEMENT PARTS LIST (Cabinet, Chassis and Packing Parts)	23
REPLACEMENT PARTS LIST (Resistors and Capacitors)	23, 24

TECHNICAL SPECIFICATIONS (DIN 45 500)

Specifications are subject to change without notice for further improvement.

AMPLIFIER SECTION

20 Hz~20 kHz continuous power output	
both channels driven	2 × 60W (4Ω)
	2 × 55W (8Ω)
40 Hz~16 kHz continuous power output	
both channels driven	2 × 60W (4Ω)
	2 × 55W (8Ω)
1 kHz continuous power output	
both channels driven	2 × 75W (4Ω)
	2 × 60W (8Ω)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.03% (4Ω)
	0.02% (8Ω)
rated power at 40 Hz~16 kHz	0.03% (4Ω)
	0.02% (8Ω)
rated power at 1 kHz	0.02% (4Ω)
	0.02% (8Ω)
half power at 20 Hz~20 kHz	0.015% (8Ω)
half power at 1 kHz	0.005% (8Ω)
−26 dB power at 1 kHz	0.12% (4Ω)
50 mW power at 1 kHz	0.2% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 4Ω	0.03%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.02%
Power bandwidth	
both channels driven, −3 dB	
(THD 0.03%)	5 Hz~30 kHz (4Ω)
(THD 0.02%)	5 Hz~30 kHz (8Ω)
Residual hum and noise (straight DC)	0.65 mV
Damping factor	25 (4Ω), 50 (8Ω)
Input sensitivity and impedance	
PHONO MM	2.5 mV/47kΩ
MC	170 μV/47Ω
TUNER, AUX	150 mV/27kΩ
TAPE 1 REC/PLAY	180 mV/33kΩ
TAPE 2	150 mV/27kΩ
PHONO maximum input voltage (1 kHz, RMS)	
MM	150 mV
MC	10 mV

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan
ORDER NO. SD8007-1770

S/N	
rated power (4Ω)	
PHONO MM	77 dB (85 dB, IHF'66)
MC	63 dB (68 dB, IHF'66: 250 μV input)
TUNER, AUX	90 dB (97 dB IHF'66)
−26 dB power (4Ω)	
PHONO MM	66 dB
MC	62 dB
TUNER, AUX	67 dB
50 mW power (4Ω)	
PHONO MM	62 dB
MC	62 dB
TUNER, AUX	62 dB
Frequency response	
PHONO	RIAA standard curve ±0.8 dB (30 Hz~15 kHz)
TUNER, AUX (straight DC)	5 Hz~150 kHz (−3 dB) +0 dB, −0.3 dB (20 Hz~20 kHz)
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
High-cut filter	7 kHz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Output voltage and impedance	
REC OUT	150 mV
REC/PLAY	30 mV/82kΩ
Channel balance, AUX 250 Hz~6,300 Hz	±1.0 dB
Channel separation, AUX 1 kHz	53 dB
Headphones output level and impedance	500 mV/330Ω
Load impedance	
MAIN or REMOTE	4Ω~16Ω
MAIN and REMOTE	8Ω~16Ω

GENERAL

Power consumption	580W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 142 × 292 mm (16-15/16" × 5-19/32" × 11-1/2")
Weight	9 kg (19.8 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (HP. 3045 system).

TECHNISCHE DATEN (DIN 45 500)

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 60W (4 Ω)
	2 × 55W (8 Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	
beide Kanäle ausgesteuert	2 × 60W (4 Ω)
	2 × 55W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 75W (4 Ω)
	2 × 60W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 20 Hz ~ 20 kHz	0,03% (4 Ω)
	0,02% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0,03% (4 Ω)
	0,02% (8 Ω)
Nennleistung bei 1 kHz	0,02% (4 Ω)
	0,02% (8 Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,015% (8 Ω)
halbe Nennleistung bei 1 kHz	0,005% (8 Ω)
−26 dB Leistung bei 1 kHz	0,12% (4 Ω)
50 mW Leistung bei 1 kHz	0,2% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,03%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,02%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	
(THD 0,03%)	5 Hz ~ 30 kHz (4 Ω)
(THD 0,02%)	5 Hz ~ 30 kHz (8 Ω)
Restbrumm und Geräusch (straight DC)	0,65 mV
Dämpfungsfaktor	25 (4 Ω), 50 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono - magnetisch (PHONO MM)	2,5 mV/47 kΩ
Phono - dynamisch (PHONO MC)	170 μV/47 Ω
Tuner, Aux	150 mV/27 kΩ
Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)	180 mV/33 kΩ
Tape 2 (TAPE 2)	150 mV/27 kΩ
Maximale TA-Eingangsspannung (1 kHz eff.)	
magnetisch (MM)	150 mV
dynamisch (MC)	10 mV
Geräuschabstand	
Nennleistung (4 Ω)	
Phono - magnetisch (PHONO MM)	77 dB (85 dB nach IHF'66)
Phono - dynamisch (PHONO MC)	63 dB (68 dB nach IHF'66: 250 μV input)
Tuner, Aux	90 dB (nach IHF'66: 97 dB)
−26 dB Leistung (4 Ω)	
Phono - magnetisch (PHONO MM)	66 dB
Phono - dynamisch (PHONO MC)	62 dB
Tuner, Aux	67 dB
50 mW Leistung (4 Ω)	
Phono - magnetisch (PHONO MM)	62 dB
Phono - dynamisch (PHONO MC)	62 dB
Tuner, Aux	62 dB
Frequenzgang	
Phono	RIAA-Standardkurve ±0,8 dB (30 Hz ~ 15 kHz)
Tuner, Aux (straight DC)	5 Hz ~ 150 kHz (−3 dB) +0 dB, −0,3 dB (20 Hz ~ 20 kHz)
Klangregler	
Baßregler (BASS)	50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ −10 dB
Tiefenfilter	30 Hz, −6 dB/Okt.
Rauschfilter	7 kHz, −6 dB/Okt.
Gehörrichtige Lautstärkekorrektur (Loudness)	
(bei −30 dB Ausgangsleistung)	50 Hz, +9 dB
Ausgangsspannung und -impedanz	
Aufnahmeausgang (REC OUT)	150 mV
Aufnahme/Wiedergabe (REC/PLAY)	30 mV/82 kΩ
Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)	±1,0 dB
Übersprechdämpfung (Aux, 1 kHz)	53 dB
Kopfhörerpegel und -impedanz	500 mV/330 Ω
Lautsprecherimpedanz	
MAIN oder REMOTE	4 Ω ~16 Ω
MAIN und REMOTE	8 Ω ~16 Ω

ALLGEMEINE DATEN

Leistungsaufnahme	580 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 142 × 292 mm
Gewicht	9 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage HP. 3045) gemessen.

DONNEES TECHNIQUES (DIN 45 500)

Sujet à changment sans préaris.

SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz, les deux canaux en circuit 2 × 60W (4Ω), 2 × 55W (8Ω)

Puissance de sortie continue de 40 Hz~16 kHz, les deux canaux en circuit 2 × 60W (4Ω), 2 × 55W (8Ω)

Puissance de sortie continue à 1 kHz les deux canaux en circuit 2 × 75W (4Ω), 2 × 60W (8Ω)

Distorsion harmonique totale
- **à puissance nominale (20 Hz~20 kHz)** 0,03% (4Ω), 0,02% (8Ω)
- **à puissance nominale (40 Hz~16 kHz)** 0,03% (4Ω), 0,02% (8Ω)
- **à puissance nominale (1 kHz)** 0,02% (4Ω), 0,02% (8Ω)
- **à demi-puissance (20 Hz~20 kHz)** 0,015% (8Ω)
- **à demi-puissance (1 kHz)** 0,005% (8Ω)
- **puissance de −26 dB à 1 kHz** 0,12% (4Ω)
- **puissance de 50 mW à 1 kHz** 0,2% (4Ω)

Distorsion d'intermodulation
- **à puissance nominale à 250 Hz: 8 kHz=4:1, 4Ω** 0,03%
- **à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω** 0,02%

Réponse de fréquences
- **les deux canaux en circuit, −3 dB**
  - **(THD 0,03%)** 5 Hz~30 kHz (4Ω)
  - **(THD 0,02%)** 5 Hz~30 kHz (8Ω)

Bruit et ronflement résiduels (straight DC) 0,65 mV

Coefficient d'amortissement 25 (4Ω), 50 (8Ω)

Sensibilité et impédance d'entrée
- **PHONO, AIMANT MOBILE (PHONO MM)** 2,5 mV/47kΩ
- **PHONO, BOBINE MOBILE (PHONO MC)** 170 μV/47Ω
- **SYNTONISATEUR, AUX (TUNER, AUX)** 150 mV/27kΩ
- **BANDE 1, ENREGISTREMENT/LECTURE (TAPE 1 REC/PLAY)** 180 mV/33kΩ
- **BANDE 2 (TAPE 2)** 150 mV/27kΩ

PHONO (tension d'entrée maximum, 1 kHz RMS)
- **AIMANT MOBILE (MM)** 150 mV
- **BOBINE MOBILE (MC)** 10 mV

Signal/Bruit
- **à puissance nominale (4Ω)**
  - **PHONO, AIMANT MOBILE (PHONO MM)** 77 dB (85 dB, IHF'66)
  - **PHONO, BOBINE MOBILE (PHONO MC)** 63 dB (68 dB, IHF'66: 250 μV input)
  - **SYNTONISATEUR, AUX (TUNER, AUX)** 90 dB (97 dB IHF'66)
- **puissance de −26 dB (4Ω)**
  - **PHONO, AIMANT MOBILE (PHONO MM)** 66 dB
  - **PHONO, BOBINE MOBILE (PHONO MC)** 62 dB
  - **SYNTONISATEUR, AUX (TUNER, AUX)** 67 dB
- **puissance de 50 mW (4Ω)**
  - **PHONO, AIMANT MOBILE (PHONO MM)** 62 dB
  - **PHONO, BOBINE MOBILE (PHONO MC)** 62 dB
  - **SYNTONISATEUR, AUX (TUNER, AUX)** 62 dB

Réponse de fréquence
- **PHONO** Courbe nominale RIAA ±0,8 dB (30 Hz~15 kHz)
- **SYNTONISATEUR, AUX (TUNER, AUX) (straight DC)** 5 Hz~150 kHz (−3 dB) +0 dB, −0,3 dB (20 Hz~20 kHz)

Réglage de la tonalité
- **BASSES (BASS)** 50 Hz, +10 dB~ −10 dB
- **AIGUS (TREBLE)** 20 kHz, +10 dB~ −10 dB

Filtre subsonique 30 Hz, −6 dB/oct.

Filtre coupe-hauts 7 kHz, −6 dB/oct.

Compensateur physiologique (volume à −30 dB) 50 Hz, +9 dB

Tension de sortie et impédance
- **SORTIE ENREGISTREMENT (REC OUT)** 150 mV
- **ENREGISTREMENT/LECTURE (REC/PLAY)** 30 mV/82 kΩ

Equilibrage des canaux, AUX 250 Hz~6 300 Hz ±1,0 dB

Séparation des canaux, AUX 1 kHz 53 dB

Niveau de sortie des casques et impédance 500 mV/330Ω

Impédance de charge
- **PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)** 4Ω~16Ω
- **PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)** 8Ω~16Ω

DIVERS

Consommation 580W

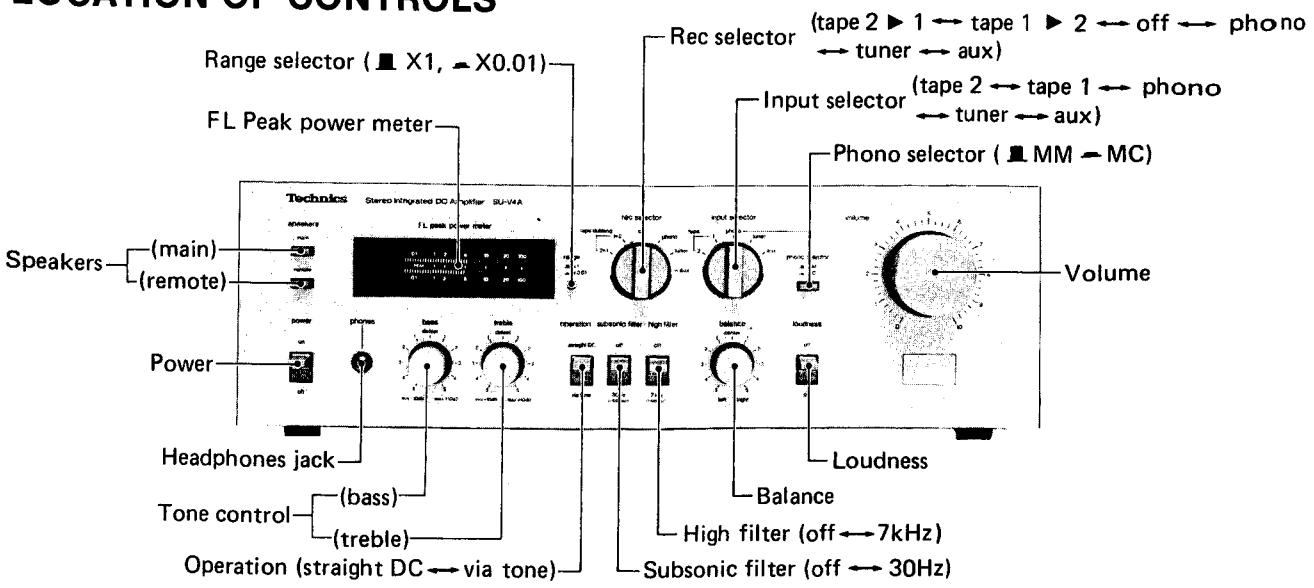
Alimentation CA 50 Hz/60 Hz, 110V/120V/220V/240V

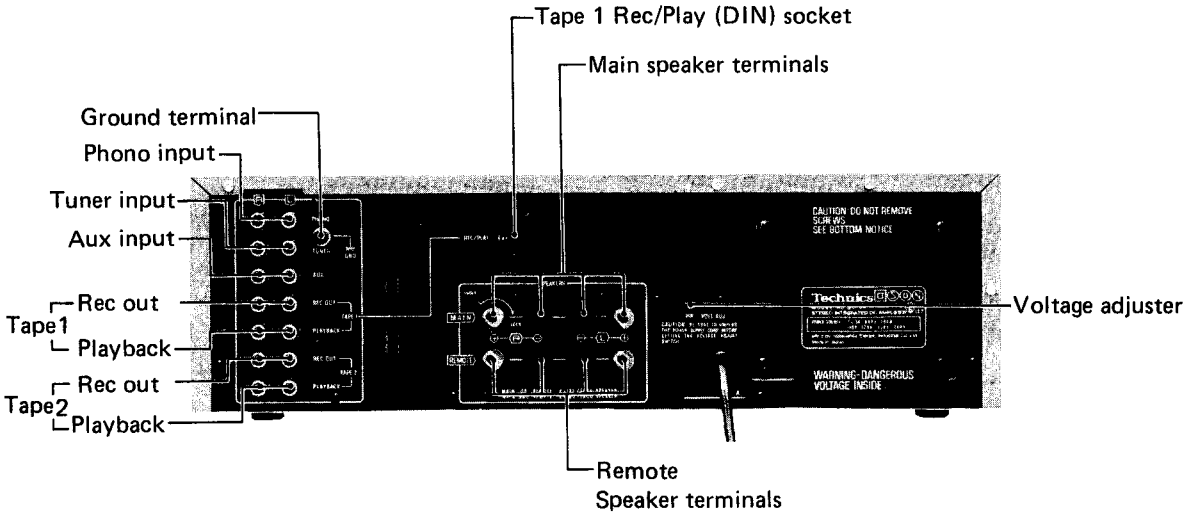
Dimensions (L×H×Pr) 430 × 142 × 292 mm

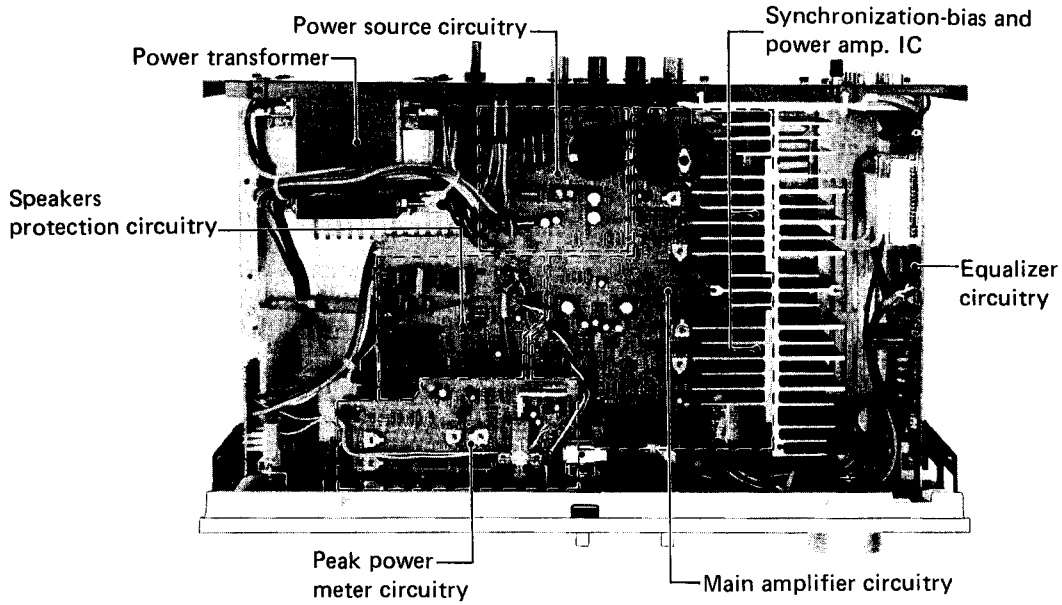
Poids 9 kg

Remarque:
On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Sytème HP. 3045).

■ LOCATION OF CONTROLS


Range selector (▬ X1, ▂ X0.01)
FL Peak power meter
Rec selector (tape 2 ▶ 1 ⟷ tape 1 ▶ 2 ⟷ off ⟷ phono ⟷ tuner ⟷ aux)
Input selector (tape 2 ⟷ tape 1 ⟷ phono ⟷ tuner ⟷ aux)
Phono selector (▬ MM ▂ MC)
Speakers (main) (remote)
Volume
Power
Headphones jack
Tone control (bass) (treble)
Operation (straight DC ⟷ via tone)
Balance
Loudness
High filter (off ⟷ 7kHz)
Subsonic filter (off ⟷ 30Hz)

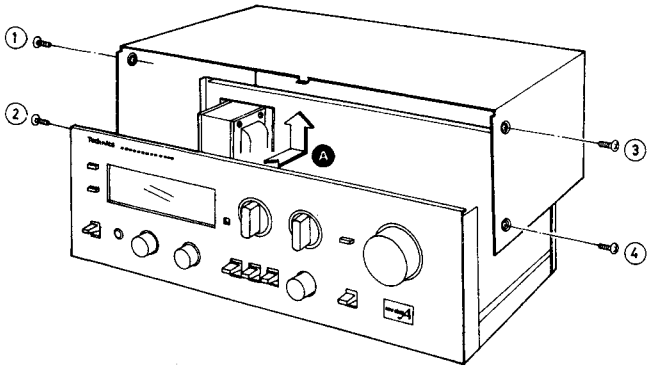




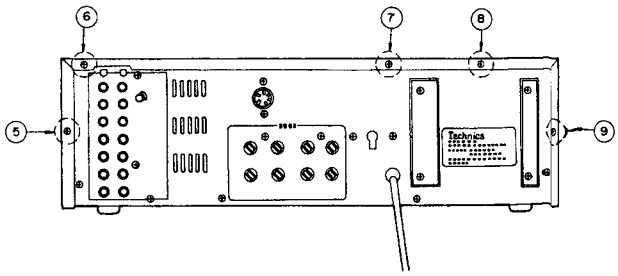
■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet**

1. Remove the 4 setscrews (Fig. 1 :①~④) on the side and 5 setscrews (Fig. 2 :⑤~⑨) on the back of the cabinet.
2. Shift the cabinet backward and lift it upward. (Arrow Ⓐ in Fig. 1)



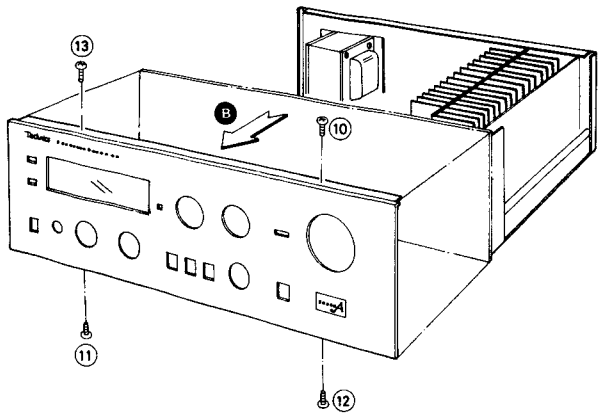
[Fig. 1]



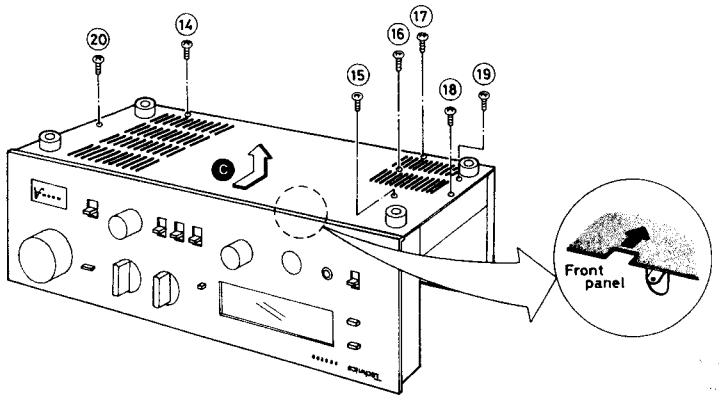
[Fig. 2]

• How to remove the front panel and the bottom board

1. Remove the 4 setscrews (Fig. 3 : ⑩ ~ ⑬) holding the front panel.
2. Pull the front panel outward from the front of the unit. (Fig. 3 : Ⓑ)
3. To remove the bottom board, remove the 7 setscrews (Fig. 4 : ⑭ ~ ⑳) holding the bottom board.



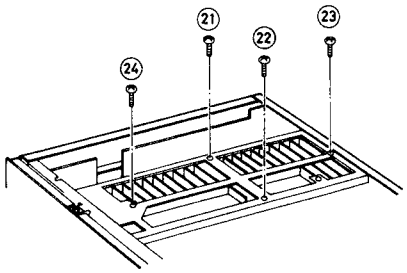
[Fig. 3]



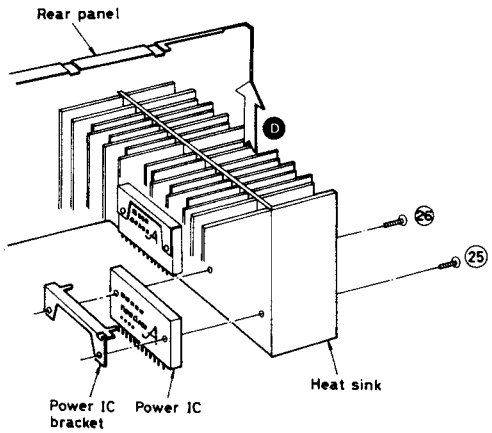
[Fig. 4]

• How to remove the power IC

1. Remove the cabinet and bottom board. (Refer to the sections "How to remove the cabinet" and "How to remove the front panel and the bottom board".)
2. Unsolder of power IC for both L ch and R ch.
3. Remove the 4 setscrews (Fig. 5 : ㉑ ~ ㉔) at the bottom of the heat sink and then remove the heat sink along with the power IC in the direction of the arrow Ⓓ . (Refer to Fig. 6)
4. Remove the 2 setscrews (Fig. 6 : ㉕, ㉖) used to secure the power IC on the heat sink and then pull the power IC.
5. When mounting the power IC, apply silicone compound (or equivalent heat diffuser) to the rear side of power IC, and then follow the steps 1 ~ 4 reversely.



[Fig. 5]



[Fig. 6]

■ ADJUSTING INSTRUCTIONS ENGLISH

• Setting of controls and instruments to be used

1. Speaker switch . . . . . main
2. Volume . . . . . .0 (minimum)
3. DC voltmeter (capable to measure 5mV)

1. Adjustment of Clamp Voltage and Icq

No.	Adjustment	DC Voltmeter Connections	Adjusting Point	Adjustment Procedure
1	Clamp Voltage	L channel Between TP301 and TP303 (minus probe) R channel Between TP302 and TP304 (minus probe)	R337 (L channel) R338 (R channel)	* Turn Icq semi-fixed resistors R367, 368 to minimum. (counter-clockwise direction) * Adjust R337 (L ch) and R338 (R ch) to approx. 0.5mV after ten minutes warm-up time.
2	Icq (Adjustment using a DC voltmeter)	L channel Between TP301 and TP303 (minus probe) R channel Between TP302 and TP304 (minus probe)	R367 (L channel) R368 (R channel)	* Adjust R367 (L ch) and R368 (R ch) to approx. 15.5mV after ten minutes warm-up time.

2. Adjustment of FL power meter

- **Setting of controls and instruments to be used**

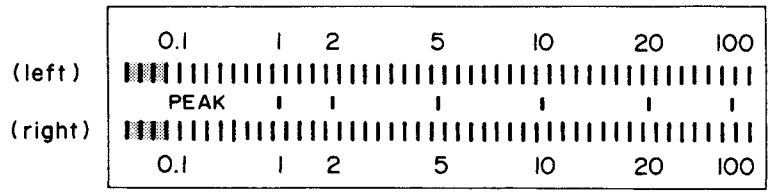
1. Input selector . . . . . .tuner
2. Speaker switch . . . . . .main
3. Meter range switch. . . . . .X0.01 or X1
4. Volume . . . . . .10 (max.)
5. Low frequency oscillator
6. AC electronic voltmeter
7. 8-ohm load resistor

2-1.

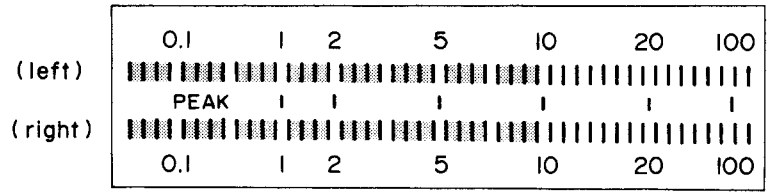
1) Connect the low frequency oscillator to the tuner terminals for both channels, and the AC electronic voltmeter to the speaker terminals in parallel with the load resistor.
2) Set the meter range switch to "X0.01" position.
3) Add 1kHz signal from the low frequency oscillator, and regulate the input level so that the AC electronic voltmeter indicates 0.15V.
4) Adjust **VR801** (L ch), **VR802** (R ch) while observing the FL peak power meter until the first segment is about to turn on (Refer to Fig. 7)

2-2.

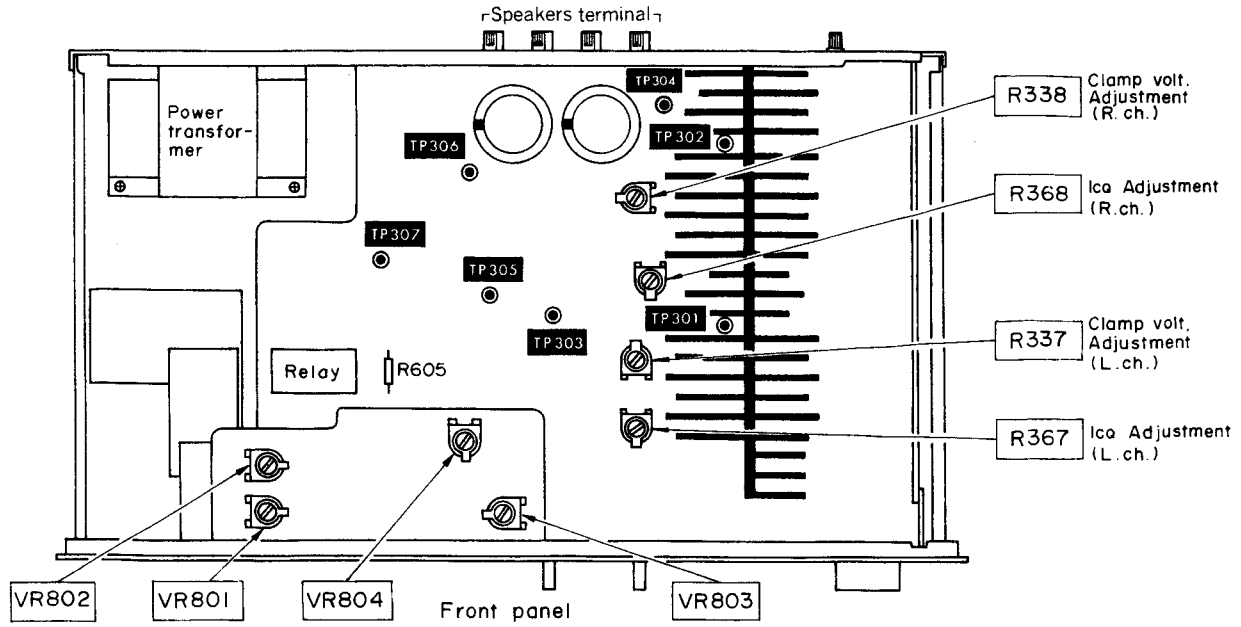
1) Set the meter range switch to "X1" position.
2) Regulate the input level so that the AC electronic voltmeter indicates 8.9V.
3) Make the adjustment in the same way as mentioned in 2-1 by regulating **VR803** (L ch), **VR804** (R ch) so that the 8 th segment to turn on. (Refer to Fig. 8) * Each segment consists of four bars.
4) Next, make the adjustment in 2-1 by regulating the input level.
5) Again regulate the input level to make the output 8.9V, and make sure that the segment at 10W (Refer to Fig. 8) position is on.



[Fig. 7] (Abb. 1)



[Fig. 8] (Abb. 2)



■ EINSTELLUNGSANWEISUNGEN ■■■■■ DEUTSCH ■■■■■

• Einstellung der zu benutzenden Regler und Instrumente

1. Lautsprecherschalter . . . . . Hauptlautsprecher ("main")
2. Lautstärkeregler . . . . . '0" (Minimalstellung)
3. Gleichstromvoltmeter. . . . . 5mV Meßbereich erforderlich.

1	Klemmspann-ung	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R337 (L-Kanal) R338 (R-Kanal)	* Die Ico halbfesteingestellen Widerstände R367 und R368 auf Minimalstellung drehen. (Entgegen dem Uhrzeigersinn) * R337 (L-Kanal) und R338 (R-Kanal) auf ungefähr 0.5mV, nach 10 Minuten Anwärmezeit, einstellen.
2	Ico (Einstellungen mit einem Gleichstrom-voltmeter)	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R367 (L-Kanal) R368 (R-Kanal)	* R367 (L-Kanal) und R368 (R-Kanal) auf ungefähr 15.5mV, nach 10 Minuten Anwärmezeit einstellen.

2. Abgleichen des FL-Leistungsmeßgerätes

• Einstellung der zu benutzenden Regler und Instrumente

1. Eingangsumschalter. . . . . tuner
2. Lautsprecherschalter . . . . . main
3. Meßbereichschalter . . . . . X0.01 oder X1
4. Lautstärkeregler . . . . . 10 (max.)
5. Niederfrequenz-Oszillator
6. Wechselstrom-Elektronen-Voltmesser
7. 8 Ohm Belastungswiederstand

2-1.

1) An die Tunerklemmen der beiden Kanäle Niederfrequenz-Oszillator anschließen, und an die Lautsprecherklemme parallel mit Belastungswiederstand den Wechselstrom-Elektronen-Voltmesser anschließen.
2) Meßbereichschalter auf "X0.01" position.
3) Vom Niederfrequenz-Oszillator 1kHz Signal speisen, und Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmesser 0.15 anzeigt.
4) Unter Beobachten auf FL-Leistungsmeßeerät **VR801** (L-Kanal), **VR802** (R-Kanal) einstellen, bis das erste Segment fast aufzuleuchten beginnt. (Vgl Abb. 1)

2-2.

1) Meßbereichschalter auf "X1" position.
2) Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmesser 8.9V anzeigt.
3) Unter Einstellung von **VR803** (L-Kanal), **VR804** (R-Kanal) in gleicher Weise wie oben in 2-1 so abgleichen, daß das 8. Segment fast aufzuleuchten beginnt.
4) Dann Eingangspegel einstellen und wie in 2-1 abgleichen.
5) Eingangspegel wieder einstellen, damit der Eingang 8.9V wird, und sicherstellen, daß das Segment bei 10W aufleuchtet. (Vgl Abb. 2)

■ INSTRUCTIONS DE REGLAGE ■■■■■ FRANÇAIS ■■■■■

• Réglage des commandes et instruments à utiliser

1. Commutateur du haut-parleur . . . . . Principal
2. Potentiométre de volume . . . . . 0 (minimum)
3. Voltmétre CC (pouvant mesurer 5mV)

1	Tension de blocage	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R337 (Canal G) R338 (Canal D)	* Tourner les résistances R367, 368 semifixes Ico sur le minimum. (à gauche). * Régler R337 (canal gauche) et R338 (canal droit) sur env. 0.5mV après 10 minutes de temps de chauffage.
2	Ico (réglage à l'aide d'un voltmètre CC`	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R367 (Canal G) R368 (Canal D)	* Régler les R367 (canal gauche) et R368 (canal droit) sur env. 15.5mV après 10mn. de prèchauffage.

2. Réglage du compteur d'alimentation FL

*** Conditions de l'appareil et équipement utilisé**

1. Sélecteur d'entrée . . . . . Commande d'accord
2. Commutateur de l'enceinte. . . . . Principal
3. Commutateur de la gamme du compteur . . . . . X0.01 or X1
4. Potentiométre de volume . . . . . 10 (maxi)
5. Oscillateur de basse fréquence
6. Voltmètre électronique CA
7. Résistance de 8 ohms de charge

2-1.

1) Brancher l'oscillateur de basse fréquence aux bornes de la commande d'accord des deux canaux; et le voltmétre électronique aux bornes de l'enceinte en paralléle avec la résistance de change.
2) Placer le commutateur de gamme du compteur sur "X0.01" position.
3) Alimenter un signal de 1kHz par l'oscillateur de basse fréquence et régler le niveau d'entrée de telle sorte que le voltmétre électronique indique 0.15V.
4) Régler le **VR801** (Canal G), **VR802** (Canal D) tout en observant le compteur d'alimentation FL jusqu' à ce que le premier segment soit sur le point d'étre branché. (Voir Fig. 7)

2-2.

1) Régler le commutateur de gamme du compteur sur "X1".
2) Régler le niveau d'entrée de telle sorte que le compteur électronique indique 8.9V.
3) Faire le réglage de la même façon que le réglage mentionné dans le paragraphe 2-1 en réglant **VR803** (Canal G), **VR804** (Canal D) de telle sorte que le huitiéme segment soit sur le point d'être branché.
4) Effectuer le réglage comme dans le paragraphe 2-1 en réglant le niveau d'entrée.
5) De nouveau régler le niveau d'entrée pour donner une sortie de 8.9V et s'assurer que le segment à position 10W, est branché. (Voir Fig. 8)

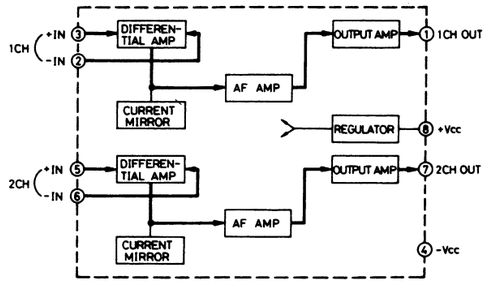
■ REPLACEMENT PARTS LIST...Electrical Parts

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		SVINJM4559DS	IC, Equalizer Amplifier
IC301, 302		SVISTK8050	IC, Synchronous Bias Circuit and Power Amplifier
IC303		AN6552F	IC, Tone Control Amplifier
IC601		SVITA7317P	IC, Speakers Protection
IC801, 802		SVIBA663	IC, FL Comparator and Driver
IC803		AN6552	IC, Voltage Amplifier
TRANSISTORS			
Q101~104		2SK170-GR	Transistor, Differential Amplifier
Q301, 302		2SK109-D	Transistor, Buffer
Q303~306		2SC2631-R	Transistor, Differential Amplifier
Q307~310, 603		2SA1015-Y	Transistor, Current Mirror and Relay Hold
Q311, 312		2SA921-T	Transistor, Emitter Follower
Q313, 314		2SA1124-R	Transistor, Pre Drive
Q315, 316		2SC2632-R	Transistor, Constant Current
Q401		2SD836-Q	Transistor, Regulator
Q402		2SB750-Q	Transistor, Regulator
Q601, 602		2SC1980-T	Transistor, Current Detector
Q604		2SC1685-T	Transistor, Relay Hold
Q801, 802		2SC1685-T	Transistor, Muting
Q803		2SD762-O	Transistor, Regulator
DIODES			
D101, 102		**MA162A**	Diode, Detector
D301, 302		**MA162A**	Diode, Detector
D303~310		**20A90**	Diode, Detector
D311, 312		**MA27A1**	Diode, Detector
D403~406	⚠	**SVD3V40**	Rectifier
D407, 408		SVDMZ316C	Diode, 16V Zener
D601, 602, 605, 606		**MA162A**	Diode, Detector
D603		**SVDSR1K2**	Diode, Bias
D801 ~ 805		**MA162A**	Diode, Detector
D806		SVDMZ322	Diode, 22V Zener
COILS and TRANSFORMER			
L301, 302		SLQY15G-3P	Coil, Choke
P.T.	⚠	SLT5P199-W	Transformer, Power Source
VARIABLE RESISTORS			
R337, 338, 367, 368		**EVTS3MA00B53**	Clamp Voltage and Icq Adjustment, 5kΩ (B)
VR201		EWF6LA031BF5	Volume Control, 250kΩ (B)
VR202		EVHHPA505G25	Balance Control, 200kΩ(W)
VR203		EWJFD0090C15	Treble Control, 100kΩ(C)
VR204		EWJFDY090530	Bass Control, 100kΩ(C)
VR801, 802		**EVTS3MA00B53**	FL Power Meter Adjustment, 500Ω (B)
VR803, 804		**EVTS3MA00B14**	FL Power Meter Adjustment, 10kΩ (B)
COMPONENT COMBINATION			
Z401		EXRFS203ZS	Component Combination, 0.01μF (x2)
THERMISTORS			
TH301, 302		ERTD2ZHL332S	Thermistor, Temperature Compensation 3.3kΩ
FUSES			
F1	⚠	XBA2C16TRO	Fuse, T1.6A(250V), Power Primary
F2	⚠	XBA2C31TRO	Fuse, T3.15A (250V), Power Primary
LAMP			
PL401	⚠	XAMR73S350A	Lamp, New Class A Badge, 250mA (6,3V)
SWITCHES			
S1		SSH153	Switch, Phono Selector
S2, 3		ESA2682	Switch, Input Selector and RecSelector
S4~7		SSL145	Switch, High Filter, Subsonic Filter, Loudness and Operation
S8		SSH281	Switch, Speakers Selector
S9	⚠	ESL21210S	Switch, Power
S10		SSH105	Switch, Meter Range
S11	⚠	ESE37200	Switch, Voltage Adjuster
RELAY			
RLY1	⚠	SSY69	Relay, Speaker Protection
METER			
		SADBG78Z	Meter, Fluorescent Peak Power

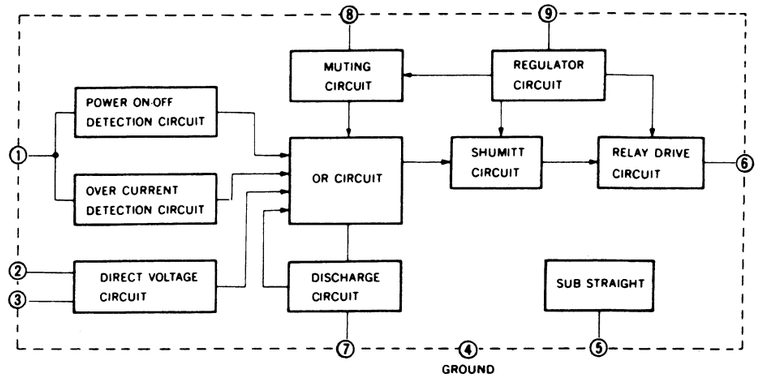
■ BLOCK DIAGRAM OF IC'S

- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.

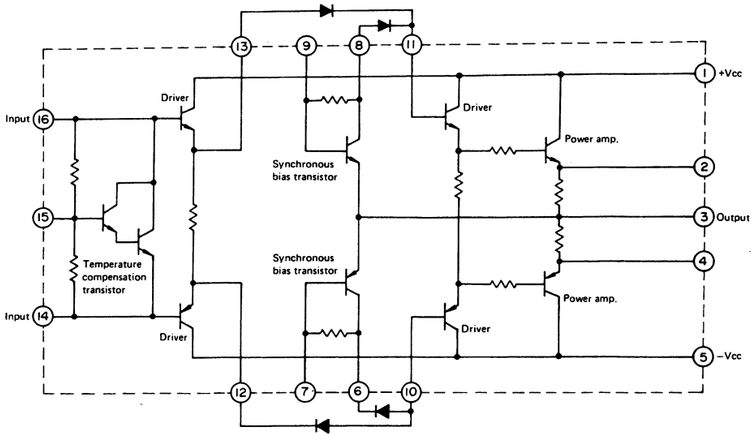


IC101 (SVINJM4559DS)
Equalizer amplifier

IC303, 803 (AN6552)
Tone control amplifier & voltage amplifier

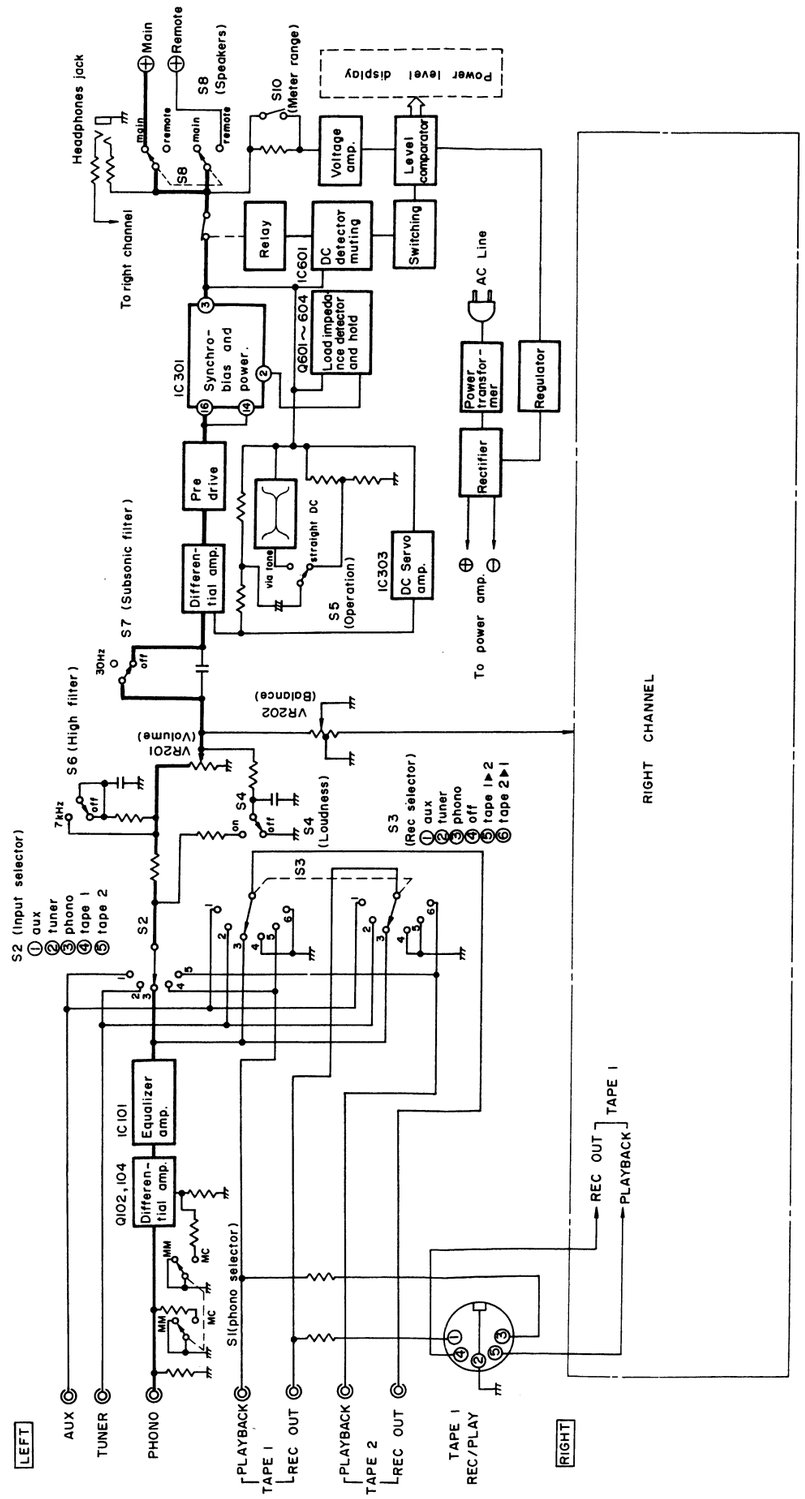


IC601 (SVITA7317P) Speakers protection

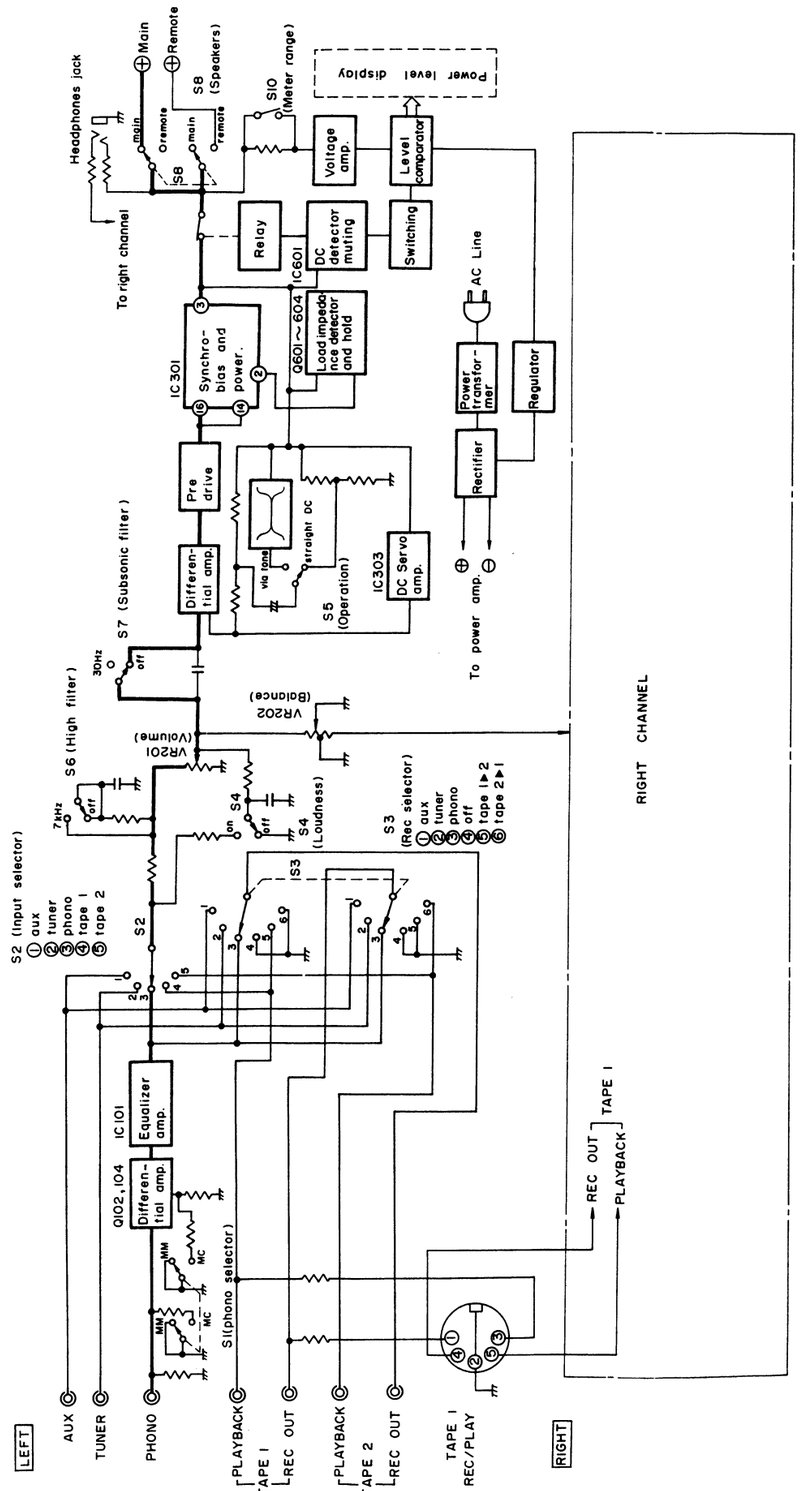


IC301, 302 (SVISTK8050) Synchronous bias circuit and power amplifier

■ BLOCK DIAGRAM



■ BLOCK DIAGRAM

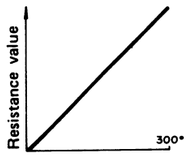


■ VARIABLE RESISTORS

• Alteration of resistance values according to the rotational angles of variable resistors

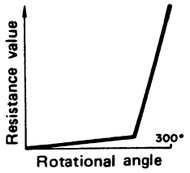
Alteration characteristics as shown below are often used for sets. All are intended to keep the frequency response of the set at optimum levels, and are used according to the types of circuits. For example, characteristic (B) is used for sound volume adjustment; (A) and (C) are for bass and treble sound quality adjustment; (G) is for medium sound quality adjustment; and (BH) is for the adjustment of sound balance between the right and left.

In the case of this unit, variable resistor with characteristic (C) which is short-circuited between its ends at rotational angle of 150° (center) is used for bass adjustment. Also, variable resistor with characteristic (C) whose resistance is zero at rotational angle of 150° (center) is used for treble adjustment.

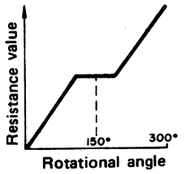


Characteristic (B)

Characteristic (C)

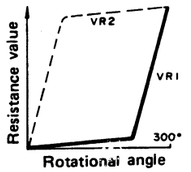


Characteristic (A)

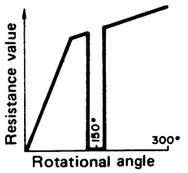


Characteristic (G)

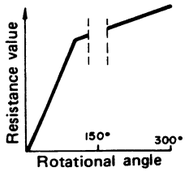
VR1 is inter locked with VR2



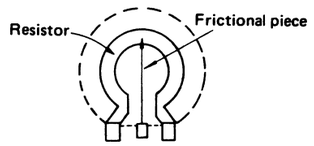
Characteristic (BH)



Characteristic (C): short-circuited at center

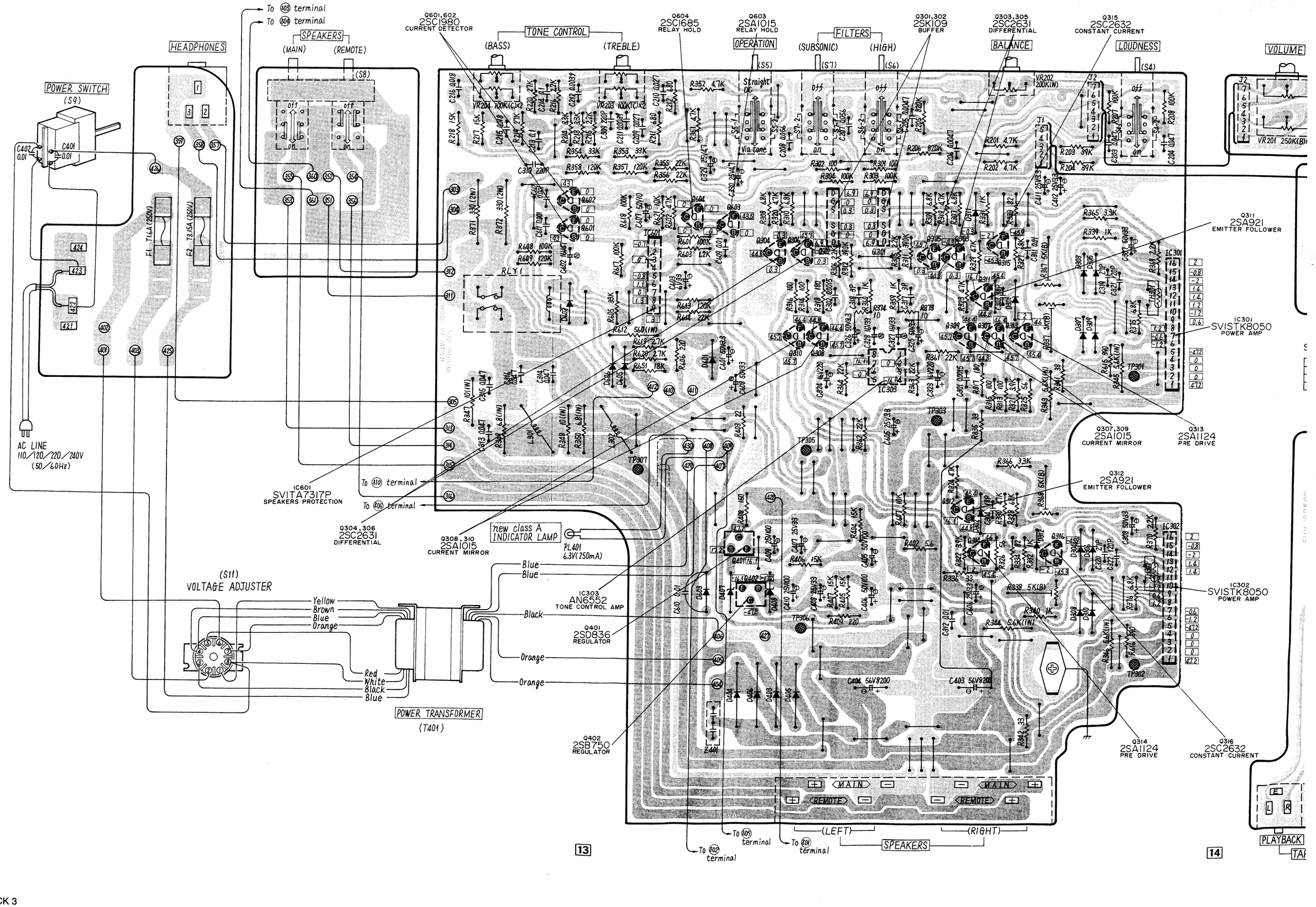


Characteristic (C): opened at center

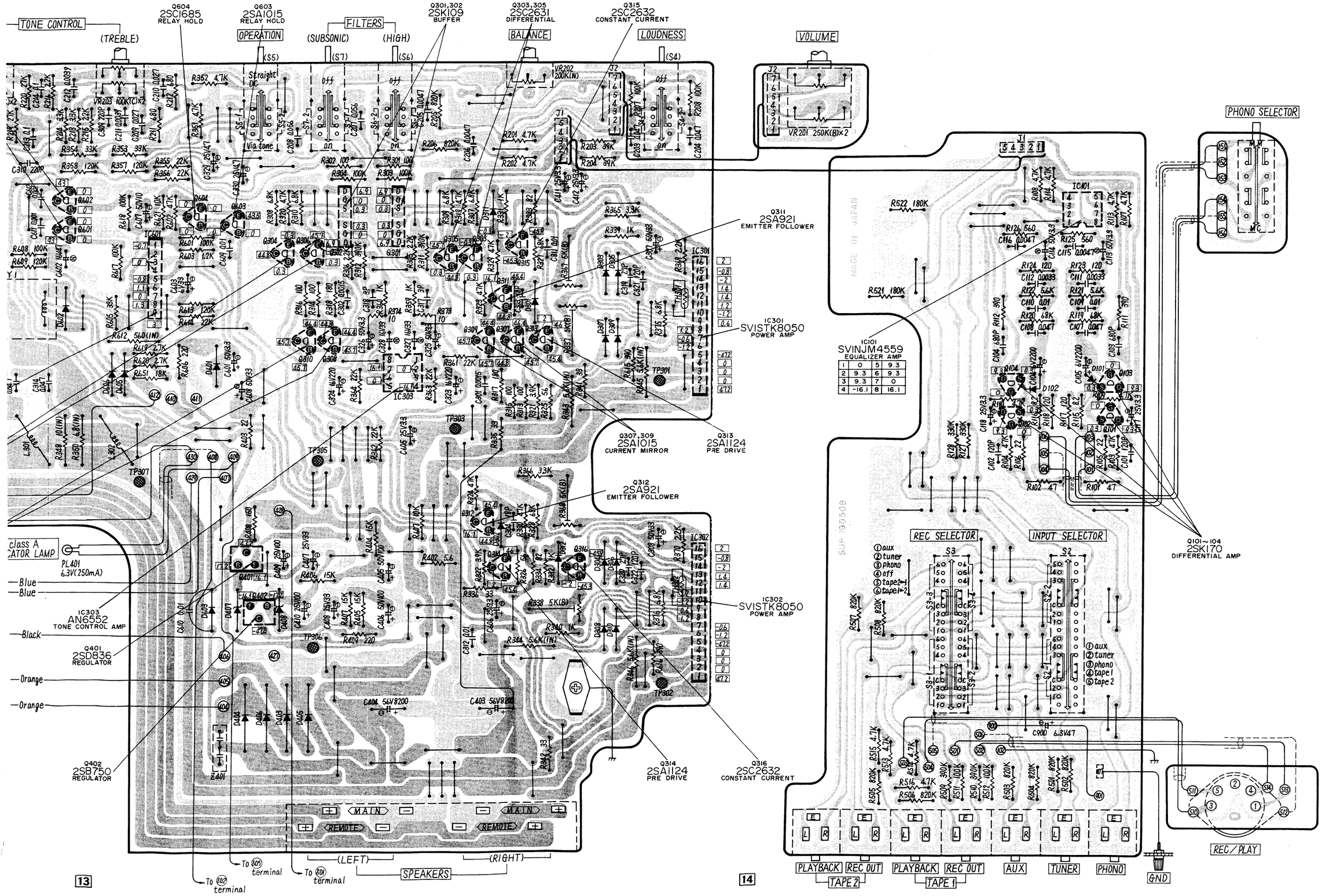


■ PRINTED CIRCUIT BOARD WIRING VIEW

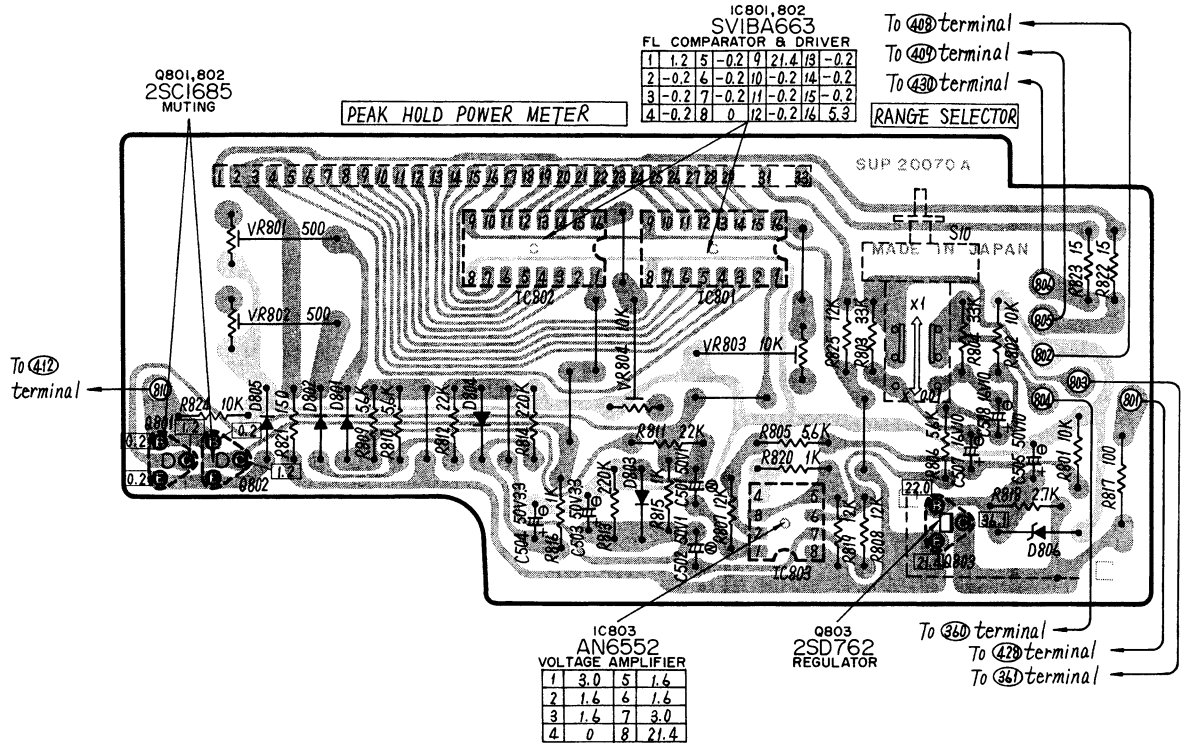
Ground (Earth) Lines



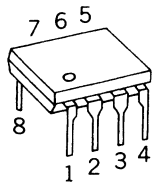
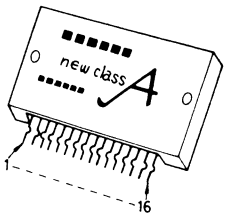
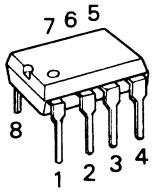
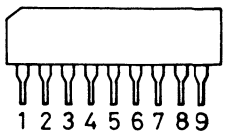
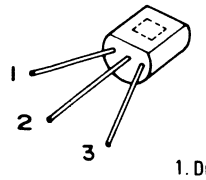
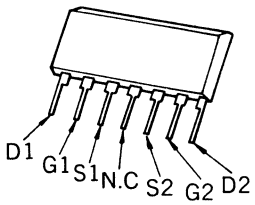
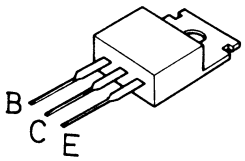
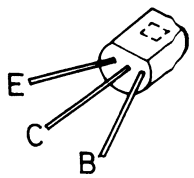
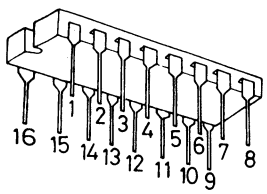
Ground (Earth) Lines

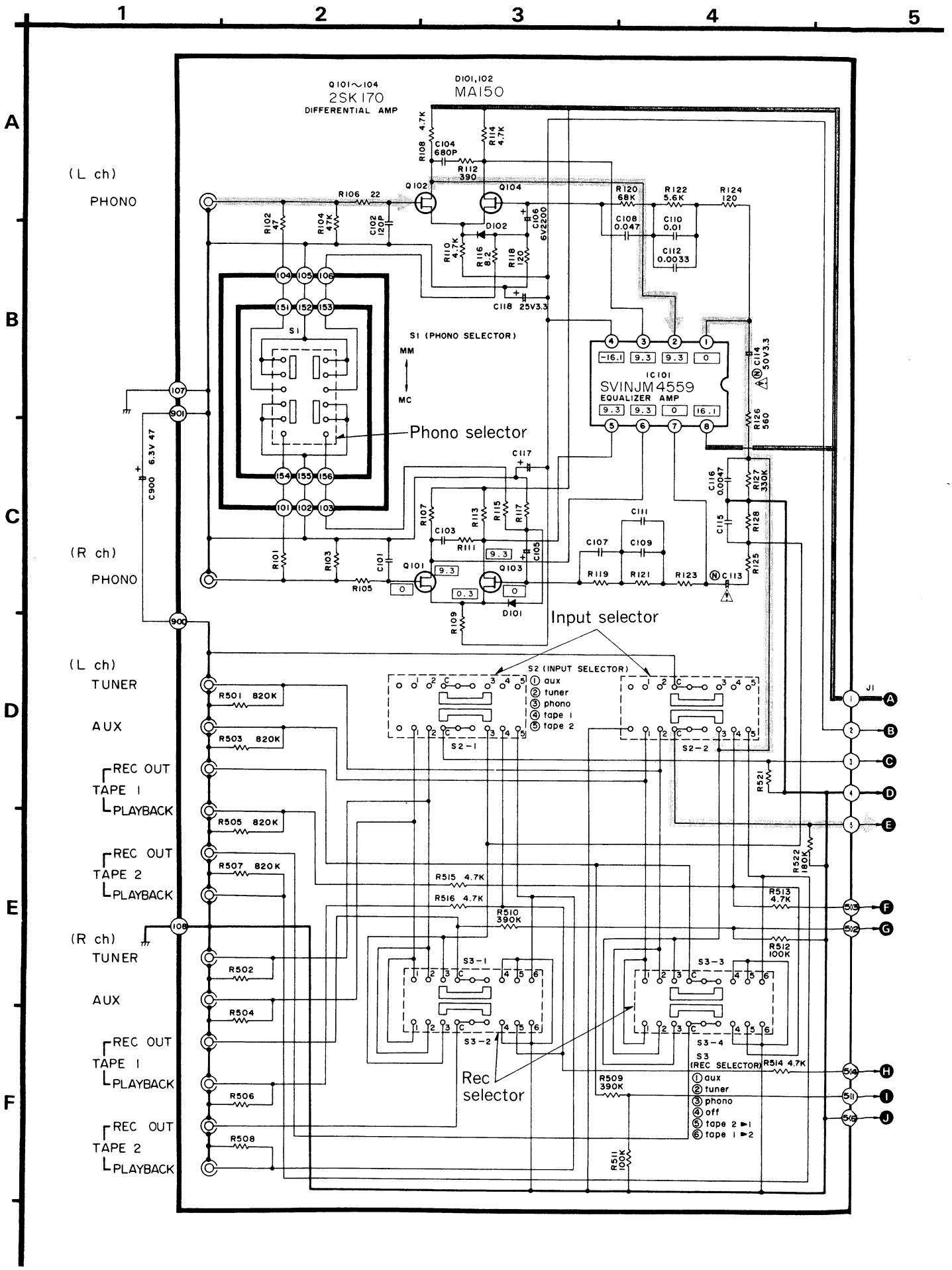


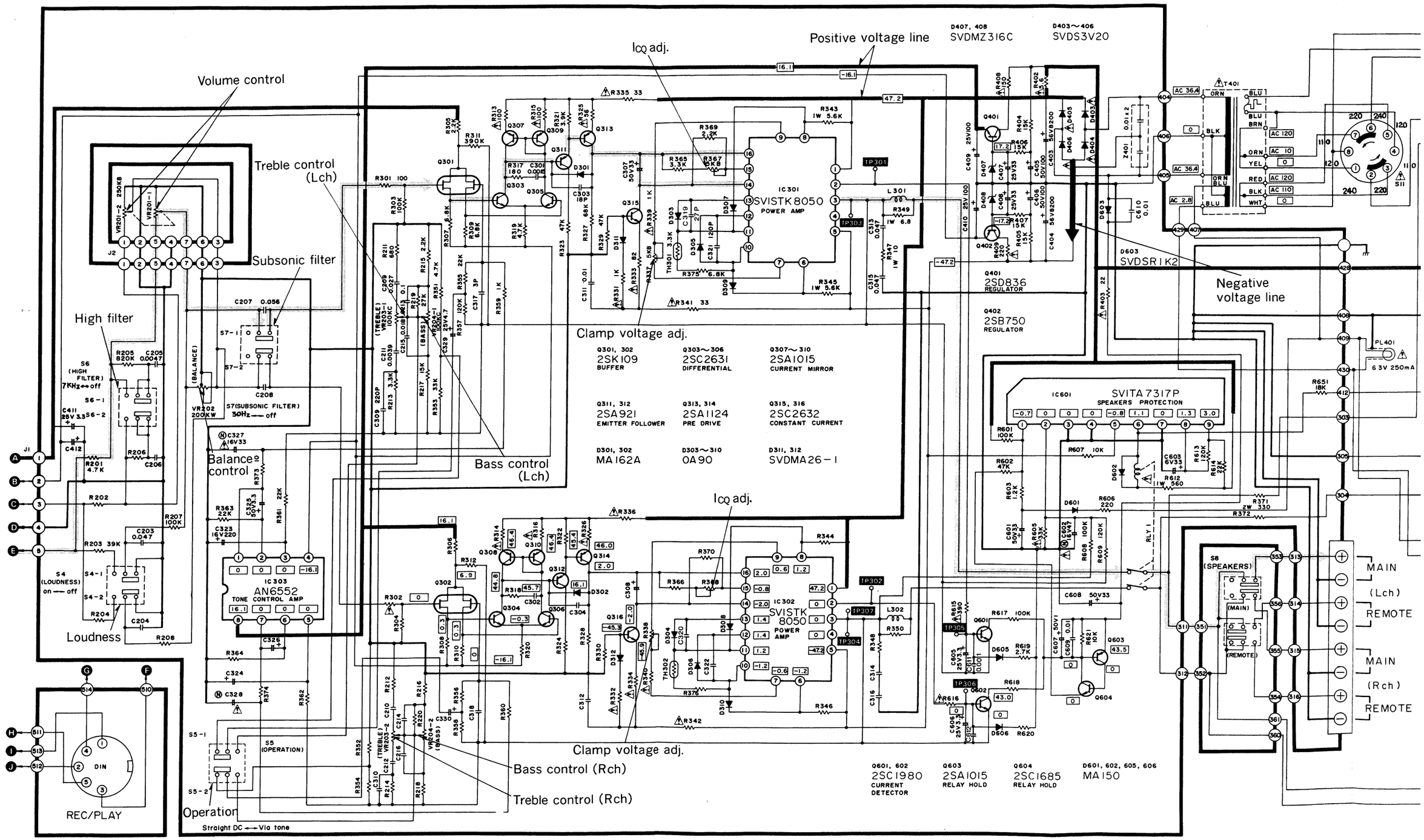
PANA-01943 / DRUCK 4



■ TERMINAL GUIDE OF TRANSISTORS AND IC'S

SVINJM4559	SVISTK8050	AN6552	SVITA7317P
			
2SK170	2SK109	2SD836 , 2SB750 2SD762	2SC2631,2SA1015 2SA921 , 2SA1124 2SC2632,2SC1980 2SC1685
 1. Drain 2. Gate 3 Source			
SVIBA663			
			


Q101~104
2SK170
DIFFERENTIAL AMP
D101,102
MA150
(L ch)
PHONO
(R ch)
PHONO
S1 (PHONO SELECTOR)
MM
MC
Phono selector
IC101
SVINJM4559
EQUALIZER AMP
Input selector
S2 (INPUT SELECTOR)
① aux
② tuner
③ phono
④ tape 1
⑤ tape 2
(L ch)
TUNER
AUX
REC OUT
TAPE 1
PLAYBACK
REC OUT
TAPE 2
PLAYBACK
(R ch)
TUNER
AUX
REC OUT
TAPE 1
PLAYBACK
REC OUT
TAPE 2
PLAYBACK
Rec selector
S3 (REC SELECTOR)
① aux
② tuner
③ phono
④ off
⑤ tape 2 ►1
⑥ tape 1 ►2
J1


Volume control
Treble control (Lch)
Subsonic filter
High filter
Balance control
Loudness
Operation
REC/PLAY
Bass control (Lch)
Clamp voltage adj.
Icq adj.
Positive voltage line
Negative voltage line
Bass control (Rch)
Treble control (Rch)
Straight DC — Via tone
IC303 AN6552 TONE CONTROL AMP
IC301 SVISTK8050 POWER AMP
IC302 SVISTK8050 POWER AMP
IC601 SVITA7317P SPEAKERS PROTECTION
Q301, 302 2SK109 BUFFER
Q303~306 2SC2631 DIFFERENTIAL
Q307~310 2SA1015 CURRENT MIRROR
Q311, 312 2SA921 EMITTER FOLLOWER
Q313, 314 2SA1124 PRE DRIVE
Q315, 316 2SC2632 CONSTANT CURRENT
D301, 302 MA162A
D303~310 0A90
D311, 312 SVDMA26-1
D407, 408 SVDMZ316C
D403~406 SVDS3V20
Q401 2SD836 REGULATOR
Q402 2SB750 REGULATOR
D603 SVDSR1K2
Q601, 602 2SC1980 CURRENT DETECTOR
Q603 2SA1015 RELAY HOLD
Q604 2SC1685 RELAY HOLD
D601, 602, 605, 606 MA150
MAIN (Lch) REMOTE
MAIN (Rch) REMOTE
S8 (SPEAKERS)
PL401 6.3V 250mA

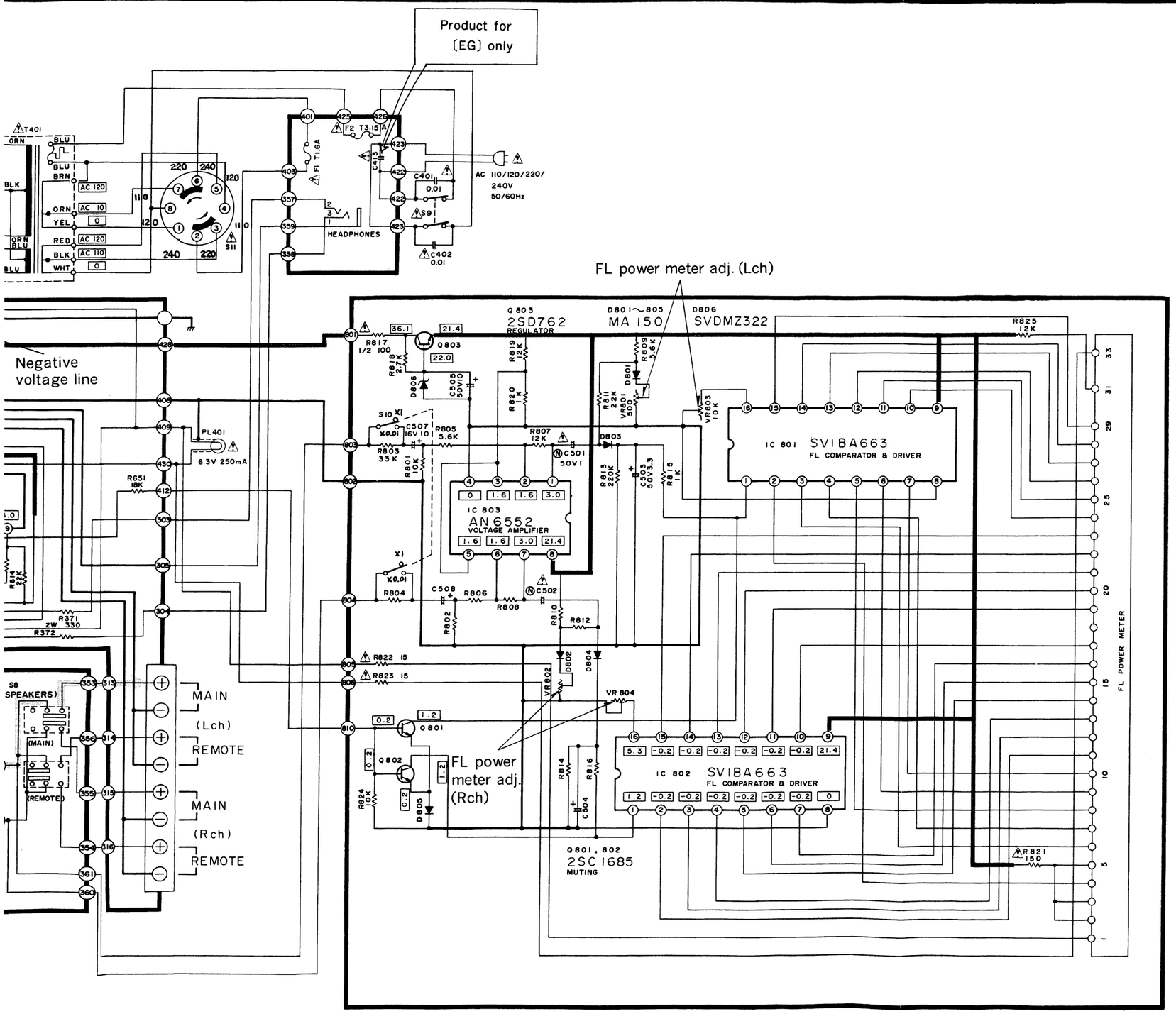
14 15 16 17 18 19 20 21

Product for (EG) only

FL power meter adj. (Lch)

Negative voltage line

FL power meter adj. (Rch)



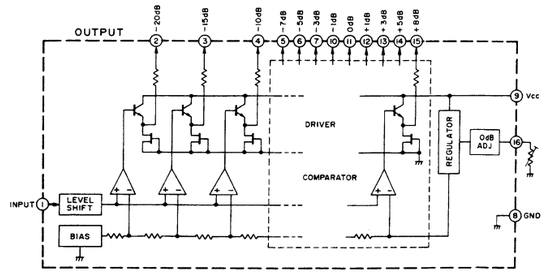
■ SCHEMATIC DIAGRAM

* This schematic diagram may be modified at any time with the development of new technology.

Notes:

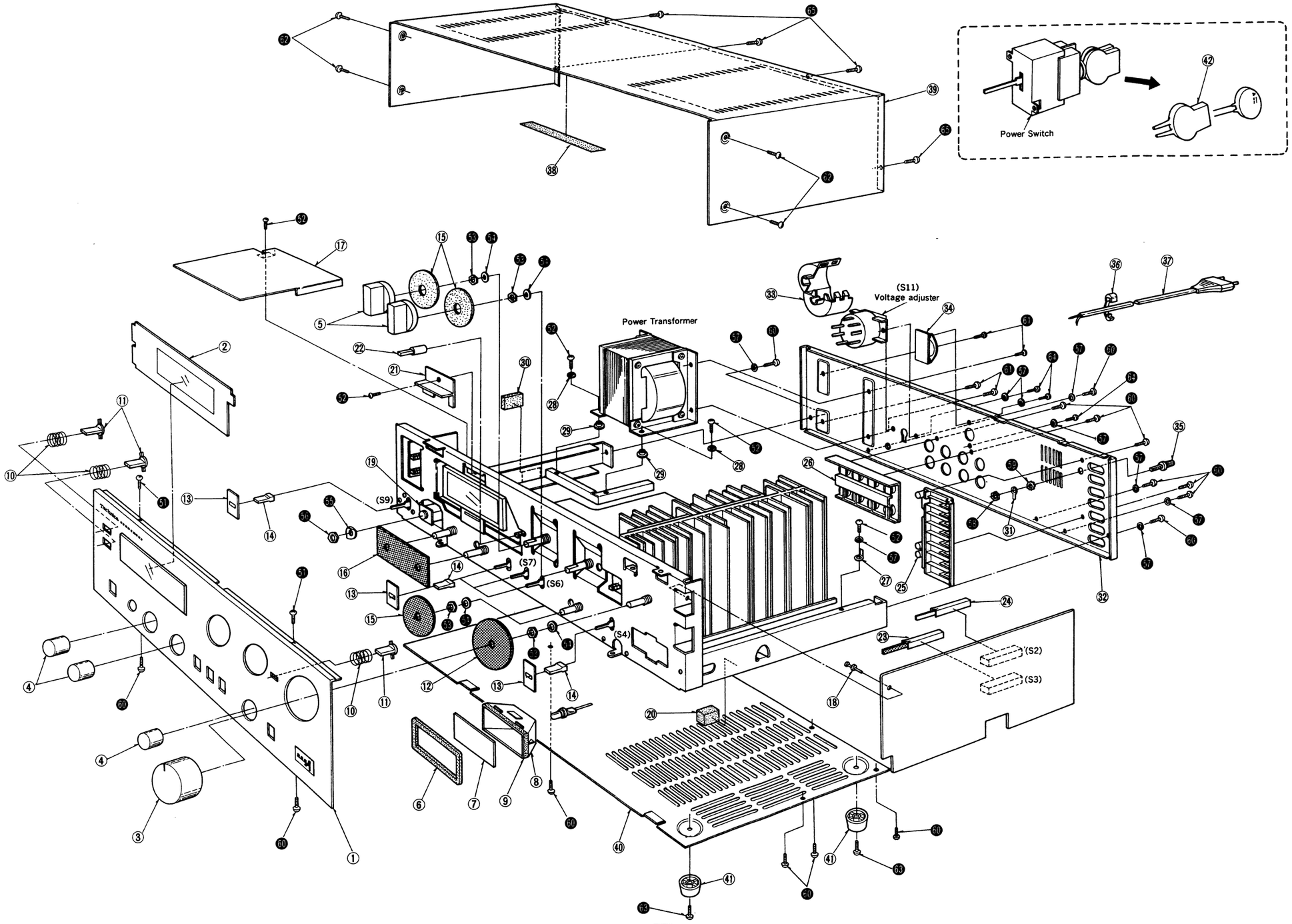
1. **S1:** Phono selector switch in **"MM"** position.
   MM◄►MC
2. **S2:** Input selector switch in **"phono"** position.
   ① aux◄►② tuner◄►③ phono◄►④ tape 1◄►⑤ tape 2
3. **S3:** Rec selector switch in **"phono"** position.
   ① aux◄►② tuner◄►③ phono◄►④ off◄►⑤ tape 2 ▶ 1
   ◄►⑥ tape 1 ▶ 2
4. **S4:** Loudness switch in **"off"** position.
5. **S5:** Operation switch in **"straight DC"** position.
6. **S6:** High filter switch in **"off"** position.
7. **S7:** Subsonic filter switch in **"off"** position.
8. **S8:** Speaker switch in **"main"** position.
   main◄►remote
9. **S9:** Power switch in **"on"** position.
10. **S10:** Meter range selector switch in **"X1"** position.
    X1◄►X0.01
11. **S11:** Voltage adjustment switch in **"220V"** position.
    240V◄►220V◄►110V◄►120V
12. ⚠ Indicates that only parts specified by the manufacturer be used for safety.
13. ▭ Indicated voltage values are the standard values for the DC electronic circuit tester (high impedance) with chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
14. Phono signal lines of left channel
15. ▬ Positive (+B) voltage lines

A B C D E F



IC801, 802 (SVIBA663)
FL comparator and Driver

■ EXPLODED VIEWS



21 22

■ REPLACEMENT PARTS LIST...Cabinet, Chassis and Packing Parts

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. △ indicates that only parts specified by the manufacturer be used for safety.
3. [K]-marked parts are used for black type only, while O-marked parts are for silver type only.
4. Parts other than [K] and O-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. SU-V4A(K)

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	O	SYW263–3	Panel, Front Ass'y
1	K	SYW263–4	Panel, Front Ass'y (Black)
2	O	SDU37	Filter, Peak Power Meter
2	K	SDU37-1	Filter, Peak Power Meter
3	O	SBN911	Knob, Volume
3	K	SBN911-1	Knob, Volume (Black)
4	O	SBN909	Knob, Balance, Treble and Bass
4	K	SBN909-1	Knob, Balance, Treble and Bass (Black)
5	O	SBN929	Knob, Rec Selector and Input Selector
5	K	SBN929-1	Knob, Rec Selector and Input Selector (Black)
6		SHG6089	Cushion, New Class A Badge
7	O	SDE253	Filter, New Class A Badge
7	K	SDE253-1	Filter, New Class A Badge
8		SMP281	Holder, New Class A Badge
9		SHS6111	Fiber, New Class A Badge
10		SUS187	Spring, Push Switch Button
11	O	SBC259	Button, Push Switch
11	K	SBC259-1	Button, Push Switch
12		SHP9299	Cover, Volume Knob
13	O	SHR5089	Cover, Lever Switch Knobs
13	K	SHR5089-1	Cover, Lever Switch Knobs (Black)
14	O	SBD31	Knob, Lever Switch
14	K	SBD31-1	Knob, Lever Switch (Black)
15		SHP9301	Cover, Balance, Input Selector and Rec Selector
16		SHP9305	Cover, Treble and Bass Knob
17		SMX361	Cover, Fuse P.C.B.
18		SHR401-1	Latch, Equalizer P.C.B.
19		XCJ6P21B-A	Jack, Headphones
20		SHG1491	Cushion, Equalizer P.C.B.
21		SMM41	Escutcheon, Peak Power Meter M'tg
22	O	SBC271	Button, Range Selector
22	K	SBC271-1	Button, Range Selector (Black)
23		ESA3361B	Remote Control, Rec Selector
24		ESA3358B	Remote Control, Input Selector
25		SJF3043AN	Terminal, Input
26		SJF5811	Terminal, Speaker
27		RJT202B	Terminal, Ground 1 Pin
28		SNW429-1	Washer, Power Transformer M'tg
29		SMXA26	Spacer, Power Transformer
30		SHG6051	Cushion, Cabinet
31		SJT215	Terminal, Ground 1 pin
32 [E]		SGP2310-1B	Rear Panel
32 [EG, EB, XGH]		SGPUV4AE	Rear Panel, SGP2310-1B with Name Plate (SGT22311)
33		SUV453	Cover, Voltage Adjuster
34		SJS6509	Socket, DIN
35		SJF4101	Terminal, Ground
36		SFSR4N4	Bushing, AC Cord
37	△	**SJA88**	AC Cord, Power Source
38		SHS6111	Fiber, Cabinet
39	O	SKC430H1	Cabinet
39	K	SKC430B1	Cabinet (Black)
40		SKU8570	Bottom Board
41		SKL227	Foot, Set
42		SMXA65	Cover, Capacitor (C401, 402)
SCREWS, WASHERS and NUTS			
●		**XTS3+8B**	Screw, Tapping, ⊕ 3 x 8 (Front Panel)
●		**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8 (Power Transformer, Fuse P.C.B. Cover)
●		**XNS8**	Nut, M8 (Volume, Input Selector, Rec Selector)
●		**XWV8**	Washer, Spring, ϕ8
●		SNE59-1	Washer, Wave Type (Headphones Jack)
●		**XNS12**	Nut, M12 (Headphones Jack)
●		**XWC3B**	Washer, Toothed Lock, ϕ3 (Rear Panel)
●		**XNG6E**	Nut, M6 (Ground Terminal)
●		**XWC6B**	Washer, Toothed Lock, ϕ6
●		**XTB3+8BFZ**	Screw, Tapping ⊕ 3 x 8 (Front Panel, Rear Panel, Input Terminal, Speaker Terminal, Bottom Board)
●		**XTB4+10BFZ**	Screw, Tapping, ⊕ 4 x 10 (Power Transformer)
●	O	**XTB4+8BFN**	Screw, Tapping, ⊕ 4 x 8 (Cabinet)
●	K	**XTB4+8BFZ**	Screw, Tapping, ⊕ 4 x 8 (Cabinet)
●		**XTB3+10BFN**	Screw, Tapping, ⊕ 3 x 10 (Foot)
●		**XTB3+6BFZ**	Screw, Tapping, ⊕ 3 x 6 (Din Socket, Voltage Adjustment)
●	O	**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8 (Cabinet)
●	K	**XTB3+8BFZ**	Screw, Tapping, ⊕ 3x 8 (Cabinet)
PACKING PARTS			
P1		SPP651	Polythylene Bag
P2		SPS2611	Pad, Left Side
P3		SPS2613	Pad, Right Side
P4 [E]		SPG2755	Carton,Box
P4 [EB, XGH, EG]		SPG2757	Carton Box
P5		SQF10421-1	Instructions Book, Printed Matter

Areas

* [E] and [EG] are available in Scandinavia and European except Belgium and Holland.
* [XGH] is available in Holland.
* [EB] is available in Belgium.

■ REPLACEMENT PARTS LIST...Resistors and Capacitors

Ref. No.		Part No.	Part Name & Description
RESISTORS			
R101, 102		**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R103, 104		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R105, 106		**ERD25FJ220**	Carbon, 22Ω, 1/4W, ± 5%
R107, 108		**ERO25CKF4701**	Metal Film, 4.7kΩ, 1/4W, ± 1%
R109, 110		**ERO25CKF4701**	Metal Film, 4.7kΩ, 1/4W, ± 1%
R111, 112		**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R113, 114		**ERO25CKF4701**	Metal Film, 4.7kΩ, 1/4W, ± 1%
R115, 116		**ERD25FJ8R2**	Carbon, 8.2Ω, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R117, 118		**ERD25FJ121**	Carbon, 120Ω, 1/4W, ± 5%
R119, 120		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R121, 122		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R123, 124		**ERD25FJ121**	Carbon, 120Ω, 1/4W, ± 5%
R125, 126		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R127, 128		**ERD25TJ334**	Carbon, 330kΩ, 1/4W, ± 5%
R201, 202		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R203, 204		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R205, 206		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R207, 208		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R211, 212		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R213, 214		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R215, 216		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R217, 218		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R219, 220		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R301, 302	△	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R303, 304		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R305, 306		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R307, 308		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R309, 310		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R311, 312		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R313, 314	△	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R315, 316	△	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R317, 318		**ERD25FJ181**	Carbon, 180Ω, 1/4W, ± 5%
R319, 320		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R321, 322		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R323, 324		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R325, 326	△	**ERD25FJ560**	Carbon, 56Ω, 1/4W, ± 5%
R327,328		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R329, 330		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R331, 332	△	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R333, 334	△	**ERD25FJ820**	Carbon, 82Ω, 1/4W, ± 5%
R335, 336	△	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ± 5%
R339, 340	△	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R341, 342	△	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ± 5%
R343, 344		ERG1ANJ562	Metal Oxide, 5.6kΩ, 1W, ± 5%
R345, 346		ERG1ANJ562	Metal Oxide, 5.6kΩ, 1W, ± 5%
R347, 348		**ERG1ANJ100**	Metal Oxide, 10Ω, 1W, ± 5%
R349, 350		**ERX1ANJ6R8**	Metal Film, 6.8Ω, 1W, ± 5%
R351, 352		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R353, 354		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R355, 356		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R357, 358		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R359, 360		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R361, 362		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R363, 364		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R365, 366		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R369, 370		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ±5%
R371, 372		ERG2ANJ331	Metal Oxide, 330Ω, 2W, ± 5%
R373, 374		**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R375, 376		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R402	△	**ERD25FJ5R6**	Carbon, 5.6Ω, 1/4W, ± 5%
R403	△	**ERD25FJ220**	Carbon, 22Ω, 1/4W, ± 5%
R404, 405		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R406, 407		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R408	△	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R409	△	**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R501, 502		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R503, 504		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R505, 506		**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R507, 508		**ETD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R509, 510		**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 10%
R511, 512		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 10%
R513, 514		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 10%
R515, 516		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 10%
R521, 522		**ERD25TJ184**	Carbon, 180kΩ, 1/4W, ± 5%
R601		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R602		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R603		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R605	△	**ERD25FJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R606		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R607		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R608		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R609		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R612		**ERG1ANJ561**	Metal Oxide, 560Ω, 1W, ± 5%
R613		**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R614		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R615, 616	△	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ± 5%
R617, 618		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R619, 620		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R621		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R651		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 10%
R801, 802		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R803, 804		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R805, 806		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R809, 810		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R811, 812		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R813, 814		**ERD25TJ224**	Carbon, 220kΩ, 1/4W, ± 5%
R815, 816		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R817	△	**ERD50FJ101**	Carbon, 100Ω, 1/2W, ± 5%
R818		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R820		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R821	△	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ± 5%
R822, 823	△	**ERD25FJ150**	Carbon, 15Ω, 1/4W, ± 5%
R824		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R825		**ERD25FJ123**	Carbon, 12kΩ, 1/4W, ± 5%
CAPACITORS			
C101, 102		ECCD1H121K	Ceramic, 120pF, 50V, ± 10%
C103, 104		ECKD1H681KB	Ceramic, 680pF, 50V, ± 10%
C105, 106		**ECEAOJS222**	Electrolytic, 2200μF, 6.3V
C107, 108		ECQM1H473JZ	Polyester, 0.047μF, 50V, ± 5%
C109, 110		ECQM1H103JZ	Polyester, 0.01μF, 50V ± 5%
C111, 112		ECQM1H332KZ	Polyester, 0.0033μF, 50V, ± 10%
C113, 114	△	**ECEA1HN3R3S**	Non-Polar Electrolytic, 3.3μF, 50V
C115, 116		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ± 10%
C117, 118		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C203, 204		ECQM1H473KZ	Polyester, 0.047μF, 50V ± 10%
C205, 206		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ± 10%
C207, 208		ECQM1H563KZ	Polyester, 0.056μF, 50V, ± 10%
C209, 210		ECQM1H273KZ	Polyester, 0.027μF, 50V, ± 10%
C211, 212		ECQM1H392KZ	Polyester, 0.0039μF, 50V, ± 10%
C213, 214		ECQM1H104KZ	Polyester, 0.1μF, 50V, ± 10%
C215, 216		ECQM1H183KZ	Polyester, 0.018μF, 50V, ± 10%
C301, 302		ECQM1H152KZ	Polyester, 0.0015μF, 50V, ± 10%
C303, 304		ECCD2H180K	Ceramic, 18pF, 500V, ± 10%
C307, 308		**ECEA1JS330**	Electrolytic, 33μF, 63V
C309, 310		ECCD1H221K	Ceramic, 220pF, 50V, ± 10%
C311, 312		ECKD1H103PF	Ceramic, 0.01μF, 50V, +100 −0%
C313, 314		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C315, 316		ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C317, 318		ECCD1H030C	Ceramic, 3pF, 50V, ±0.25pF
C319, 320		ECCD1H270K	Ceramic, 27pF, 50V, ± 10%
C321, 322		ECCD1H121K	Ceramic, 120pF, 50V, ± 10%
C323, 324		**ECEA1CS221**	Electrolytic, 220μF, 16V
C325, 326		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C327, 328	△	ECEA1CN330S	Non-Polar Electrolytic, 33μF, 16V
C329, 330		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C401, 402	△	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, +100 −0%
C403, 404		ECETS56V822U	Electrolytic, 8200μF, 56V
C405, 406		**ECEA1HS101**	Electrolytic, 100μF, 50V
C407, 408		**ECEA1VS330**	Electrolytic, 33μF, 35V
C409, 410		**ECEA1ES101**	Electrolytic, 100μF, 25V
C411, 412		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C413 [EG] only	△	ECQE2A473MCS	Polyester, 0.047μF, 250VAC, ±20%
C501, 502	△	ECEA1HN010S	Non-Polar Electrolytic, 1μF, 5IV
C503, 504		**ECEA50Z3R3**	Electrolytic, 3.3μF 50V
C505		**ECEA1HS100**	Electrolytic, 10μF, 50V
C507, 508		**ECEA1HS100**	Electrolytic, 10μF, 50V
C601		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C602	△	ECEA1CN470S	Non-Polar Electrolytic, 47μF, 1IV
C603		**ECEA1CS330**	Electrolytic, 33μF, 16V
C605, 606		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C607		**ECEA50Z1**	Electrolytic, 1μF, 50V
C608		**ECEA1JS330**	Electrolytic, 33μF, 63V
C609		ECKD1H103PF	Ceramic, 0.01μF, 50V, +100 −0%
C610		**ECKD2H103PE**	Ceramic, 0.03μF, 500V, +100 −0%
C611, 612		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +100 −0%
C900		**ECEA1AS470**	Electrolytic, 47μF, 10V